

1                   **IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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3                   **COMPOSITE SCAFFOLDING PLANK AND METHOD OF FORMING SAME**

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5                   This application is a continuation-in-part and claims the benefit of U.S. Non-  
6                   Provisional Patent Application Number 09/739,799 filed by Honein on October 30, 1996,  
7                   which itself claims the benefit of U.S. Provisional Application Number 60/005,774 filed  
8                   by Honein on October 31, 1995.

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10                   **BACKGROUND OF THE INVENTION**

11                   **Field of Invention.** This invention relates to a scaffolding plank. More  
12                   specifically, it is directed to an improved, low cost wide composite scaffolding plank  
13                   formed by pinning and anchoring narrow wooden boards in side by side abutment and a  
14                   method for accomplishing same. The strength of a wooden plank may be improved by  
15                   cutting the plank longitudinally, alternating the wood grains of the plank sections and  
16                   pinning the plank sections together as described above.

17                   **Related Art.** Prior to this invention, two types of scaffolding planks existed in  
18                   the prior art: the solid single board plank and the laminated plank. The solid single board  
19                   plank comprises one wide wooden board. The laminated plank is constructed from  
20                   multiple layers of wooden strips glued together. Each of the two types of prior art  
21                   scaffolding planks have disadvantages.

22                   Due to the limited resources of old growth forests and the harvesting schemes for  
23                   new growth timber, the yield of wooden boards wide enough from which to construct a

1 solid single board plank is decreasing. Typically, only the center portion of a large tree is  
2 sufficiently broad to produce a solid single board plank. Thus, with decreasing yield, the  
3 solid single board planks are becoming more costly and difficult to make. The main  
4 disadvantage of laminated planks is that laminated planks primarily consist of glued  
5 layers of wooden strips, which glued layers of wooden strips absorb substantial amounts  
6 of moisture. After absorbing enough moisture, the wooden fibers of the laminated plank  
7 soften and the moisture hastens the decay of the laminated plank. Likewise, any time one  
8 of the veneers of the laminated plank cracks, the laminated plank loses its strength and  
9 consistency and can also no longer be used as a scaffolding. Thus, there has existed a  
10 need for a scaffolding plank that is as strong and as durable as a solid single board plank,  
11 that does not require the use of wider trees, and that does not have the weaknesses  
12 inherent in laminated planks. It would thus be beneficial to the prior art to construct a  
13 scaffolding plank that is as strong and as durable as a solid single board plank, that does  
14 not require the use of wider trees, and that does not have the weaknesses inherent in  
15 laminated planks.

16 Scaffolding planks are however strictly regulated. The Occupational Safety and  
17 Health Administration, OSHA, as well as the Southern Pine Inspection Bureau, SPIB,  
18 outline strict standards for scaffolding planks. Pursuant to such regulations, scaffolding  
19 planks must comply with certain width, breakage, and quality standards. The OSHA and  
20 SPIB standards are strict because workers entrust their lives to the scaffolding. The prior  
21 art would thus benefit from a scaffolding plank, as described above, that meets and  
22 preferably exceeds the OSHA and SPIB standards.

1 Because the lives of workers hinge on the integrity of scaffolding planks, any  
2 safety factors that can be added to a scaffolding plank greatly enhance the value of the  
3 scaffolding plank. It would be beneficial to the prior art to provide a scaffolding plank, as  
4 described above, that also includes an additional worker safety factor.

5 Manufactured wide boards for scaffolding are unknown to the prior art. Prior  
6 references, however, disclose structural wood assemblies formed from a plurality of  
7 smaller wood boards. Illustrative of such wood assemblies are U.S. Patent Number  
8 2,650,395 that issued to de Anguera on September 1, 1953, U.S. Patent Number  
9 5,120,378 that issued to Porter et al. on June 9,, 1992, U.S. Patent Number 4,534,448 that  
10 issued to Trainer on August 13, 1985, U.S. Patent Number 1,167,988 that issued to  
11 Faulkner on January 11, 1916, and U.S. Patent Number 2,569,450 that issued to Bouton  
12 on October 2, 1951. None of these devices provides a truly simple remedy for the  
13 problem of providing manufactured wide boards that can meet the OSHA standards for  
14 scaffolding.

15 The assembly shown in U.S. Patent Number 2,650,395 discloses a method of  
16 forming wood flooring from relatively narrow pieces of wood having varying lengths.  
17 The pieces of wood are placed in a number of parallel rows wherein the pieces are placed  
18 end to end. A plurality of spaced thin connector keys are driven into lateral bores in the  
19 aligned pieces and hold the pieces together.

20 U.S. Patent Number 5,120,378 discloses an apparatus and method for producing a  
21 prestressed wood material beam. The wood beams are held together using adhesives or  
22 mechanical fasteners such as nails or staples.

1 The other cited references disclose clamps or platforms for securing wooden  
2 boards.

3 Though the above mentioned devices and assemblies may be helpful for their  
4 intended purposes, none disclose a manufactured scaffolding plank that meets OSHA and  
5 SPIB requirements, that is as strong and as durable as a solid single board plank, that  
6 does not require the use of wider trees, and that does not have the weaknesses inherent in  
7 laminated planks.

### 8 9 SUMMARY OF THE INVENTION

10 Accordingly, the objectives of this invention are to provide, inter alia, a composite  
11 scaffolding plank and method of forming same that:

- 12 • provides a scaffolding board that meets the OSHA requirements;
- 13 • is as strong and as durable as a solid single board plank, does not require  
14 the use of wider trees, and does not have the weaknesses inherent in  
15 laminated planks;
- 16 • utilizes a plurality of relatively narrow boards to form a relatively wide  
17 board;
- 18 • includes a tensioning device that pulls the boards together and prevents  
19 their separating;
- 20 • creates a safer scaffold board by providing spaced connectors such that.  
21 when one of the members of the scaffold board breaks, that member and

1 the remainder of the scaffolding board remain solid beyond the nearest  
2 connector;

- 3 • creates a safer scaffold board by providing separate parallel boards such that a  
4 break initiated by an imperfection in one of the narrow boards will not  
5 spread to the connected narrow boards;
- 6 • facilitates alternating the wood grains of a board to create a stronger  
7 scaffolding board;
- 8 • affords an inexpensive source for relatively wide boards and alleviates the  
9 scarcity of wide boards; and
- 10 • is easily and inexpensively manufactured from readily available resources.

11 Other objects of the invention will become apparent from time to time throughout  
12 the specification and claims as hereinafter related.

13 To achieve such improvements, my invention is a composite scaffolding plank  
14 made from a plurality of wooden boards positioned in side to side parallel abutment. A  
15 plurality of spaced pins extend transversely through the wooden boards. A cam means on  
16 the pins pulls and holds the boards together. In addition, my invention is a method of  
17 forming wide wooden planks from two or more narrow wooden boards by positioning the  
18 boards in side to side parallel abutment and embedding a plurality of spaced pins  
19 transversely through the boards. Further, a method of increasing the strength of a wooden  
20 plank is to cut the plank longitudinally, position the resulting sections in side to side  
21 parallel abutment with the wood grains alternating directions, and to subsequently embed  
22 a plurality of spaced pins in the sections.

## BRIEF DESCRIPTION OF THE DRAWING

The manner in which these objectives and other desirable characteristics can be obtained is explained in the following description and attached drawings in which:

FIG. 1 is a partial isometric exploded view of the composite scaffolding plank showing the pin removed from the bore.

FIG. 2 is a partial cross sectional isometric view of the scaffolding plank showing the pin in the bore.

FIG. 3 is an isometric view of the scaffold board pinning machine.

FIG. 4 is an isometric view of the loading station.

FIG. 5 is an isometric view of a pinning station.

FIG. 6 is an isometric view of the testing station.

FIG. 7 is a table showing the results of a set of tests performed on the composite scaffolding boards.

FIG. 8 is a table showing the results of another set of tests performed on the composite scaffolding boards.

FIG. 9 is a table showing the results of another set of tests performed on the composite scaffolding boards.

FIG. 10 is a table showing the results of another set of tests performed on the composite scaffolding boards.

## DETAILED DESCRIPTION OF THE INVENTION

The preferred embodiment of my invention is illustrated in FIGS. 1 through 10 and the composite scaffolding plank is depicted as 10. Generally, the composite

1 scaffolding plank 10 is formed from a plurality of wooden boards 20 held in tight side to  
2 side abutment by a plurality of spaced pins 50 that include a cam means 60 thereon.

3 Each of the wooden boards 20 has a top 26, a bottom 28, opposing sides 22, and  
4 opposing ends 24. Typically, the wooden boards 20 are elongated in a lengthwise  
5 direction measured from end 24 to end 24. The sides 22 extend parallel to the lengthwise  
6 direction and preferably normal to the ends 24. Preferably, the wooden boards 20 are not  
7 artificially manufactured and, thus, include wood grains 30 (ie. aligned wood fibers that,  
8 in a piece of dressed wood, rise to the surface in a particular direction).

9 In the composite scaffolding plank 10, the plurality of wooden boards 20 are  
10 positioned in side to side parallel abutment. Typically, the wooden boards 20 and/or their  
11 sides 22 have a substantially equal height, measured as the perpendicular distance from  
12 top 26 to bottom 28. Consequently, when positioned as described above, the wooden  
13 boards 20 form a substantially flat continuous surface along their tops 26. The sides of  
14 the wooden boards 20 are relatively flat such that adjacent wooden boards 20 are in  
15 contact along their full length. Preferably, the ends 24 of the wooden boards 20 are  
16 aligned so that their ends 24 form a substantially continuous surface. Therefore, when  
17 formed of wooden boards 20 having substantially equal lengths, each end 24 of the  
18 composite scaffolding plank 10 form a substantially continuous surface. In the preferred  
19 embodiment, the height of each wooden board 20 is the smallest dimension of that board  
20 20.

21 A plurality of spaced pins 50 extend substantially through the wooden boards 20  
22 in a substantially transverse direction, normal to the sides 22 and normal to the

lengthwise direction of the wooden boards 20. The pins 50 preferably extend the full width of the composite scaffolding plank 10.

Attached to each of the pins 50 is a cam means 60 for pulling and holding the wooden boards 20 together. Preferably, the cam means 60 is an integral helical thread 64 that extends the length of each pin 50.

In the preferred embodiment, the pins are twist lock pins 80. The twist lock pins 80 are formed from an elongated piece of metal having a square cross section, the square. A torque applied to the square twists and plastically deforms the square. After deformation, the corners of the original square form the helical thread 64 of the twist lock pin 80 and form the outer diameter of the helical thread 64. In addition, the center portion of the sides of the square form the root diameter of the helical thread 64. However, the helical threads 64 may comprise conventionally cut threading.

As each pin 50 presses into the wooden boards 20, the helical thread 64 embeds into the wooden boards 20 and causes the pin 50 to rotate. The pin 50 turns and pulls the wooden boards 20 together. Further, because the helical threads 64 embed into the wooden boards 20, the helical threads 64 anchor the pin 50 in position and hold the wooden boards 20 together. Typically, while the pins 50 are inserted, an external force presses the wooden boards 20 laterally together slightly compressing the wooden boards 20 and forcing the sides 22 into tight abutment. As a consequence, when the external force is removed, the wooden boards 20 are no longer compressed and create a tension in the anchored pins 50. The tension prevents separation of the wooden boards 20 and holds them in tight abutment.



1 Preferably, the aligned wooden boards 20 have a plurality of transverse bores 40  
2 extending substantially therethrough to facilitate placement of the pins 50 in the wooden  
3 boards 20. Thus, the bores 40 are provided before placement of the pins 50 in the  
4 wooden boards 20. The bores 40 are aligned such that each bore extends substantially the  
5 full width of the composite scaffolding plank 10. A corresponding aperture 44 in at least  
6 one of the sides 22 of the composite scaffolding plank 10 for each of the bores 40  
7 provides access to the bore 40 and a place of entry for the corresponding pin 50. The  
8 outer diameter of the helical thread 64 is greater than the diameter of the bore 40; and the  
9 root diameter of the helical thread 64 is preferably less than the diameter of the bore 40.  
10 Whereby, the helical thread 64 embeds in the wooden boards 20 as the pin 50 is pressed  
11 into the bore 40.

12 Although the composite scaffolding plank 10 may be formed of any number of  
13 wooden boards 20 having virtually any width, the preferred embodiment of the composite  
14 scaffolding plank 10 includes three (3) wooden boards 20 each having a height of two (2)  
15 inches and a width of four (4) inches. In this way, the composite scaffolding plank 10 is  
16 made of conventionally sized and readily available wooden boards 20 that form a  
17 composite scaffolding plank 10 having a height of two (2) inches and a width of twelve  
18 (12) inches.

19 The method for forming wide wooden planks 10 from two or more wooden  
20 boards 20, generally, includes positioning the wooden boards 20 in side to side parallel  
21 abutment and subsequently embedding a plurality of spaced pins 50 substantially through  
22 the wooden boards 20.

1 The method is accomplished using a scaffold board pinning machine 100 similar  
2 to that shown in Figure 3. As shown, the machine includes a loading station 110, one or  
3 more spaced pinning stations 120, a testing station 140, and a conveyance means 150 for  
4 moving the wooden boards 20 through the scaffold board pinning machine 100.

5 The wooden boards 20 slide down an inclined roller deck 112 onto the roller bed  
6 104 of the scaffold board pinning machine 100. The boards 20 enter the roller bed 104 in  
7 side to side parallel arrangement.

8 The roller bed 104 is made of a plurality of rollers 106 held in a horizontal plane  
9 and positioned such that their axes are normal to the longitudinal direction of the wooden  
10 boards 10 positioned thereon. The rollers 106 of the roller bed 104 are positioned on  
11 each component of the scaffold board pinning machine 100 and are free to rotate about  
12 their respective axes. The rollers 106 may include one or more drive motors that turn the  
13 rollers 106 and thereby move the wooden boards 20 supported thereon and, thereby,  
14 provide the conveyance means 150.

15 Alternatively, the preferred embodiment utilizes a hydraulic or pneumatic  
16 cylinder 114 positioned proximal the rear end 116 of the loading station 110 to provide  
17 the conveyance means 150. Once the boards 20 enter the roller bed 104, the cylinder 114  
18 simultaneously forces all of the boards 20 over the rollers 106 from the loading station  
19 110 toward its forward end 118. Because the cylinder 114 forces all of the boards 20  
20 simultaneously, the cylinder 114 aligns the ends 24 of the boards 20. Thus, the loading  
21 station 110 and conveyance means 150 may serve to align the wooden boards 20 such  
22 that their ends 24 form a substantially continuous surface. Subsequent sets of boards 20  
23 advance the previous sets over the roller bed 104.

From the loading station 110, the boards 20 enter one or more spaced pinning stations 120. Preferably, the scaffold board pinning machine 100 includes a plurality of pinning stations 120 the number of which equals the predetermined number of pins 50 for each composite scaffolding plank 10. Commonly, the pins 50 are spaced every twenty inches. Thus, for example, a ten foot long composite scaffolding plank 10 would include five pins 50; and the scaffold board pinning machine 100 for making the ten foot long composite scaffolding plank 10 would include at least five pinning stations 120. The preferred number of pinning stations 120 is five (5).

The pinning station 120 includes a horizontal compression means 126, a vertical compression means 122, a drill 132, a pin holder 138, and a pin press 135. In operation, the pinning station 120 compresses the boards 20 transversely and vertically. The vertical compression maintains the relative position of the boards 20 while the scaffold board pinning machine 100 embeds the pins 50. The pinning station 120 drills a plurality of lateral bores 40 through the aligned boards 20 to facilitate the embedding of the pins 50. Finally, the pinning machine embeds the pins 50 transversely through the boards 20.

Typically, the vertical compression means 122 is a hydraulic or pneumatic vertically mounted cylinder 124 that has a relatively wide ram head 125. With the boards 20 in place, the vertically mounted cylinder 124 activates such that the ram head 125 engages the top 26 of the boards 20. The ram head 125 is sufficiently wide that it engages all of the boards 20 simultaneously and holds the boards 20 between the ram head and the rollers 106.

The horizontal compression means 126 is generally one or more hydraulic or pneumatic horizontally mounted cylinders 128. With the boards 20 in place, the

1 horizontally mounted cylinder 128 engages and compresses the boards 20. Therefore, in  
2 addition to providing the desired compression, the horizontally mounted cylinder 128  
3 maintains the relative position of the boards 20 during drilling of the bores 40 and  
4 embedding of the pins 50.

5 Once held in position, the drill 132 activates and drills a lateral bore 40  
6 completely through the aligned boards 20. The drill 132 is positioned on the pinning  
7 station 120 such that the drill bit 134 engages one of the sides 22 of the nearest board 20  
8 normal to the side 22. Upon completion of the drilling, the drill 132 retracts the drill bit  
9 134 from the boards 20.

10 The pins 50 are gravity fed through a pin hopper 137 to a pin holder 138. The pin  
11 holder 138 maintains the pin 20 in a position aligned with the bores 40 (ie. lateral to the  
12 sides 22 of the boards 20 and positioned approximately midway between the top 26 and  
13 bottom 28 of the boards 20).

14 The pin press 135 is typically a hydraulic or pneumatic cylinder constructed and  
15 is positioned to exert a force on the pin 50 sufficient to push the pin 50 into the bore 40.  
16 Preferably, the pin press 135 is mounted opposite the drill 132 on the pinning station 120  
17 with the axis of the drill bit 134 and the axis of the pin press ram 136 substantially  
18 aligned. Thus, the drill 132 drills the bore 40 from one side 22 of the boards 20; and the  
19 pin press 135 forces the pin 50 into the bore 40 from the opposite side 22 of the boards  
20 20. As previously stated, the pins 50 include a cam means 60 which embeds into the  
21 boards 20 as the pin 50 is placed therein. The cam means 60 acts as an anchor  
22 maintaining the pin 50 within the boards 20 as well as maintaining the relative position of  
23 the boards 20.

After the pin 50 is embedded into the boards 20, the vertical compression means 122 and the horizontal compression means 126 disengage. With the boards 20 no longer compressed, the pins 50 embedded within the boards 20 experience a tensioning due to the boards 20 returning to their noncompressed state.

Once released from the pinning stations 120, the conveyance means 150 advances the composite scaffolding plank 10 to the testing station 140. The composite scaffolding plank 10 advances until it is substantially centered in the testing station 140. When centered, a pair of spaced supports 145 each having a pair of rollers 106 support the composite scaffolding plank 10. The pair of rollers 106 of the supports 145 are vertically aligned to support the composite scaffolding plank 10 during both upward and downward testing.

Two vertically mounted hydraulic or pneumatic testing cylinders 141 are positioned substantially equidistant between the supports 145. One of the testing cylinders 141 is positioned above the composite scaffolding board 10 to exert a downward force thereon; and the other testing cylinder 141 is positioned below the composite scaffolding board 10 to exert an upward force thereon. The testing cylinders 141 are mounted with their rams 142 positioned so that, upon actuation, the rams 142 exert a force on the composite scaffolding plank 10. A contact rod 144 attached to the ram contact surface 143 extends in a direction transverse to the lengthwise direction of the composite scaffolding plank 10 being tested. Thus, when each testing cylinder 141 is actuated, the respective contact rod 144 exerts a force on the composite scaffolding plank 10 that is substantially a transverse line. Preferably, the magnitude of the force is 500 pounds or more.

1 To accommodate for the weight of the composite scaffolding plank 10 during  
2 testing in the upward direction, the testing station 140 includes compensating cylinders  
3 146 that have rollers thereon. When testing in the upward direction, the compensating  
4 cylinders 146 lift the composite scaffolding plank 10 until it contacts the upper rollers  
5 106 of the supports 145. In this way, the lower testing cylinder 141 is not lifting the  
6 composite scaffolding plank 10 during the upward test. After the test, the compensating  
7 cylinders 146 lower the scaffolding plank 10 onto the lower rollers 106 of the supports  
8 145. The compensating cylinders 146 retract sufficiently that they do not contact the  
9 composite scaffolding plank 10 during its downward testing.

10 After sequentially testing the composite scaffolding board 10 in both directions,  
11 the testing cylinder 141 releases the force on the composite scaffolding plank 10 and the  
12 conveyance means 150 advances the composite scaffolding plank 10 from the scaffold  
13 board pinning machine 100. Only one of the testing cylinders 141 are actuated at a time  
14 to permit testing of the composite scaffolding plank 10 in both directions.

15 Although the preferred embodiment of the testing station 140 includes two testing  
16 cylinders 141, it may use only one testing cylinder 141. In that event, however, the  
17 composite scaffolding plank 10 must be manually turned to test both sides of the plank  
18 10.

19 The above described machine and method may be applied to a wide wooden  
20 plank to increase the strength and the safety of the plank. To increase the strength of the  
21 plank, it is first cut longitudinally into a plurality of wooden plank sections 20, preferably  
22 three (3). The wooden plank sections 20 are placed in side to side parallel abutment.  
23 However, the alignment of the wood grains 30 of the wooden plank sections 20 are

alternated such that the direction of the wood grains 30 of adjacent wooden plank sections 20 alternates. The wooden plank sections 30 are then reattached as described above using embedded pins 50. When reconnected, the composite scaffolding plank 10 has greater strength than the original wooden plank because the wood grains 30 oppose one another. Further, a failure in one of the wooden plank sections 20 will not spread to adjacent wooden plank sections 20.

**Test Results.** A series of tests comparing the load capacity and deflection of composite scaffolding planks 10 and solid wide boards (hereinafter collectively referred to as "planks") show that the composite scaffolding planks 10 perform substantially as well as, if not better than, solid wide boards. The tests were conducted utilizing an INSTRON 4507 (serial number H1963) testing machine. Four composite scaffolding planks 10, each having a height of two inches and a width of twelve inches and made from three two-by-fours, and two solid two-by-twelves, having similar overall dimensions were individually tested under the same conditions.

The planks rested in the INSTRON machine on supports proximal the plank ends. The INSTRON machine then applied a downward force on the planks. A rod on the end of the ram of the INSTRON machine cylinder provided a downward load across the width of the planks at a position near the midpoint of the supports. First, the INSTRON machine measured the deflection of each plank when subjected to a load of 500 pounds. Next, for the composite scaffolding planks 10, the INSTRON machine measured the deflection of each composite scaffolding plank 10 when subjected to a load of 500 pounds concentrated on a single board 20. Each of these first two tests were performed on both sides of each plank. Finally, the INSTRON machine measured the maximum

1 load to failure and the deflection at failure for each of the planks. The results of the test  
2 are shown in Figure 7.

3 As shown by the test results, the composite scaffolding planks 10 are slightly less  
4 rigid (having a higher modulus of elasticity) and less brittle (having a greater fiber  
5 strength) and, thus, can withstand greater deflection before failure than the solid boards.  
6 Further, the composite scaffolding planks 10 tested have a higher average capacity than  
7 the solid wide boards tested. Consequently, the composite scaffolding boards 10  
8 performed better under load than the solid wide boards.

9 Additional tests have also been performed as tabulated in Figure 8. Among  
10 others, the flexural stress, modulus of elasticity, horizontal shear stress, coefficient of  
11 variation, and maximum deflection of the composite scaffolding plank 10 were tested and  
12 compared. The results tabulated in Figure 8 correspond to a test which compared a Dense  
13 Industrial 65 Scaffold Plank, which is a very common type and grade of single board  
14 plank in the field today, against a composite scaffolding plank 10 having the same  
15 dimensions as well as a laminated plank having the same dimensions. From the  
16 comparison results, it is clear that the composite scaffolding plank 10 not only has a  
17 greater modulus of elasticity than the solid single board plank, but that the composite  
18 scaffolding plank 10 can also withstand more flexural and horizontal shear stress than the  
19 solid single board plank before breaking. In addition, Figure 8 shows that the composite  
20 scaffolding plank 10 is relatively close to the laminated plank in respect to modulus of  
21 elasticity, flexural stress, and horizontal shear stress.

22 Figure 9 tabulates and compares the failure test results of the same type of boards.  
23 As can be seen, the composite scaffolding plank 10 fails at a higher load per square inch



1 than comparable solid single board and laminated planks. Thus, the composite  
2 scaffolding plank 10 can withstand greater force before breaking.

3 Figure 10 tabulates and compares the deflection results on the same type of  
4 boards given a loading of 50 pounds per square foot. As can be seen, the composite  
5 scaffolding plank 10 deflects the same distance as the laminated plank and much less than  
6 the solid single board plank at the same load. Further, Figure 10 illustrates that each type  
7 of board is well within the OSHA allowable deflection at that load rating. The composite  
8 scaffolding plank 10 also is well within the OSHA allowable deflection at all other load  
9 ratings.

10 **Other Advantages and Results.** The Applicant has achieved the objectives of  
11 this invention by pinning a plurality of wooden boards 20 together with pins 50.  
12 Specifically, the wooden boards 20 are pinned together transversely through their  
13 smallest dimension. It is understood, however, that at the time of the invention many  
14 people in the industry thought that manufacturing a scaffolding plank by pinning wooden  
15 boards together transversely to their smallest dimension would result in the splitting of  
16 the wooden boards. Applicant has been recognized by many in the industry as the first to  
17 successfully pin wooden boards together transversely to their smallest dimension without  
18 splitting any of the wooden boards.

19 Applicant's invention is even more significant since the composite plank 10 meets  
20 and exceeds prevailing OSHA and SPIB requirements and actually, for the most part,  
21 outperforms prior art planks. In addition, Applicant's composite plank 10 has achieved  
22 substantial commercial success. Due to its long-felt need, stellar performance, and  
23 commercial success, the composite plank 10 is now recognized as the third type of

1 scaffolding plank by renowned industry organizations, such as the Carpenter's Union, the  
2 Scaffold Industry Association, and the Masonry Construction Magazine.

3 The use of pinned narrower wooden boards 20 also inherently increases the  
4 strength of the composite plank 10. Under OSHA standards, the size of knots allowable  
5 in narrower boards is much smaller than that allowable in wider boards. Knots are  
6 inherent weak points in wooden boards. Thus, the use of narrower boards, which  
7 necessarily must have smaller knots to comply with OSHA regulations, increases the  
8 overall strength of the composite plank 10.

9 The use of boards 20 with smaller knots in conjunction with the spaced apart  
10 pinning of such boards 20 creates a sharing of load on the composite plank 10 which  
11 increases the overall strength of the composite plank 10 up to 20%.

12 The use of multiple narrower wooden boards 20 pinned together also creates an  
13 additional worker safety factor which is unique to the composite plank 10. When the  
14 composite plank 10 is overstressed to the point of failure, only one of the wooden boards  
15 20 will normally break and such board 20 will normally break only up to the nearest pin  
16 50. The worker standing on the composite plank 10 can hear and see the single wooden  
17 board 20 breaking, allowing the worker enough time to get to safety. Prior art scaffolding  
18 planks do not have this worker safety factor. When a prior art scaffolding plank breaks,  
19 the failure is typically sudden putting the life of the worker in danger.

20 The foregoing disclosure and description of the invention is illustrative and  
21 explanatory thereof. Various changes in the details of the illustrated construction may be  
22 made within the scope of the appended claims without departing from the spirit of the

- 1 invention. The present invention should only be limited by the following claims and their
- 2 legal equivalents.

FOR THE REASON